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Parenting and the Behavior Problems of Young Children With an Intellectual Disability: Concurrent and Longitudinal Relationships in a Population-Based Study

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Abstract

We examined parenting behaviors, and their association with concurrent and later child behavior problems. Children with an intellectual disability (ID) were identified from a UK birth cohort ($N = 516$ at age 5). Compared to parents of children without an ID, parents of children with an ID used discipline less frequently, but reported a more negative relationship with their child. Among children with an ID, discipline, and home atmosphere had no long-term association with behavior problems, whereas relationship quality did: closer relationships were associated with fewer concurrent and later child behavior problems. Increased parent-child conflict was associated with greater concurrent and later behavior problems. Parenting programs in ID could target parent-child relationship quality as a potential mediator of behavioral improvements in children.

Key Words: *intellectual disability; parenting; longitudinal; parent-child relationship*

Parenting exerts an important influence on children's developmental outcomes. A wide range of outcomes can be affected including brain development, socioemotional, motor, cognitive, and behavioral development, psychopathology, school adjustment, and later delinquency (Belsky & deHaan, 2011; Hoeve et al., 2009; McLeod, Weisz, & Wood, 2007). Parenting behaviors are clinically very important because of their potential for modification. Many early intervention programs target parenting behaviors to improve children's behavioral outcomes. Despite the evidence that parenting behaviors contribute to child outcomes, less is known about the type, quality, and effects of parenting on outcomes for children with intellectual and developmental disabilities. For preventative interventions to be effective in this population, we need to understand better how parenting works in the early years to affect the development and maintenance of behavior problems as these emerge. The present study aims to enhance our understanding of how parenting behaviors are associated with emerging behavior problems in the first 5 years of life among children with an intellectual disability (ID).

Practically speaking, parenting may have a more crucial role to play in developmental disabilities (DD) because of the prolonged period of offspring dependence on parents and parents' frequent role as intervention agents. Although parenting interactions with children with an ID have sometimes been found to be similar to those without a disability (e.g., Sterling, Barnum, Skinner, Warren, & Fleming, 2012), the presence of developmental delay is associated with negative parenting more than other conditions such as child physical disability or mental health problems (Brown, McIntyre, Crnic, Baker, & Blacher, 2011). In parallel, children with an intellectual and developmental disability are more likely to present higher levels of behavior problems than typically developing peers (Totsika, Hastings, Emerson, Berridge, & Lancaster, 2011a; Totsika, Hastings, Emerson, Lancaster, & Berridge, 2011b). Therefore, an important focus for research is to understand the relationships between parenting

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behaviors and the behavior problems of children with developmental disability (Hastings, 2002).

Certain aspects of parenting have been explored for their association concurrently and longitudinally with behavior problems in children and young people with DD. Maternal criticism is related to higher levels of child behavior problems (Baker, Smith, Greenberg, Seltzer, & Taylor, 2011; Hastings & Lloyd, 2007), and more positive parent-child relationships are associated with lower levels of later behavior problems (Smith, Greenberg, Seltzer, & Hong, 2008), as is limit setting (Osborne, McHugh, Saunders, & Reed, 2008). In a recent study, harsh/angry parenting emerged as the most significant predictor of concurrent and persistent conduct problems, even after accounting for the effects of deprivation, child, and parental characteristics (Emerson, Einfeld, & Stancliffe, 2011). This latter finding is significant because the study included young children with ID and many authors emphasize the need to intervene early in the child's life (Mazzuchelli & Sanders, 2011; Sanders, 2012). However, more research is needed to understand better how parenting functions in the early years to affect the development and maintenance of behavior problems in children with ID.

Our primary aim was to enhance understanding of how parenting behaviors are associated with emerging behavior problems in the first 5 years of life among children with an ID. We focused on three dimensions of parenting that have been identified in developmental research as related to child behavior problems: (a) use of discipline, (b) family environment (home chaos), and (c) parent-child relationship.

The *use of discipline* is widely researched in typically developing children and children with attention deficit hyperactivity disorder (ADHD). Inappropriate discipline practices such as reprimanding or ignoring, tend to follow from child disruptive behavior and usually result in noncompliance (Kalb & Loeber, 2003; Kremer, Smith, & Lawrence, 2010). Noncompliance in infancy has been associated with higher levels of behavior problems in toddlerhood and even delinquent behaviors in adolescence (Kalb & Loeber, 2003). In a diary study of parents of under-5s, child noncompliance was the most common factor triggering a discipline technique, and in more than 50% of instances discipline was followed by further noncompliance (Kremer et al., 2010). Parental disciplining has not attracted much research attention in DD but some recent data indicate comparable levels of discipline between parents of children with autism and those without (Lambrechts, Van Leeuwen, Boonen, Maes, & Noens, 2011).

Home chaos is a construct that describes environmental confusion and disorganization in the family home; an environment characterized by noise, lack of structure, and time pressure (Matheny, Wachs, Ludwig, & Phillips, 1995). Although related to socioeconomic and psychological adversity, home chaos is not a proxy for either construct, but an independent environmental measure (Dumas et al., 2005; Matheny et al., 1995). Chaos has been associated with ineffective discipline practices, and can lead to less than optimal developmental outcomes including behavior problems, especially anger and aggression (Dumas et al., 2005; Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). Twin studies have demonstrated that home chaos accounts for environmental risk associated with decreased cognitive ability, especially verbal (Asbury, Wachs, & Plomin, 2005; Hart, Petrill, Deckard, & Thompson, 2007), although its effect on children with an ID has not been explored so far.

The final parenting dimension explored was the nature of the *relationship between parent and child*, specifically the dimensions of conflict and closeness. Among typically developing children, closeness and conflict have been associated with antisocial behavior (Criss, Shaw, & Ingoldsby, 2003), although over time, higher levels of adolescent antisocial behavior are more likely to follow from high levels of conflict in middle childhood, as opposed to low levels of closeness (Trentacosta et al., 2011). However, these relationship dimensions, closeness, and conflict, have not been explored in families of children with a DD. Positive maternal affect seems to be associated with fewer concurrent behavior problems (Orsmond, Seltzer, Greenberg, & Krauss, 2006), whereas negative affect has been shown to have an indirect effect (via child emotions) on young children's externalizing problems (Newland & Crnic, 2011). We have some information on closeness and conflict effects from a study examining teacher-student relationship (Blacher, Baker, & Eisenhower, 2009). Relationships between teachers and children with an ID were systematically more negative (higher conflict and less closeness) across childhood compared to

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relationships between teachers and students without an ID (Blacher et al., 2009; Eisenhower, Baker, & Blacher, 2007). Moreover, relationship quality in early childhood significantly predicted decreases in later behavior problems, irrespective of having an ID (Blacher et al., 2009). Therefore, it remains to be seen whether closeness and conflict between parents and children with an ID follows similar patterns.

In terms of research methodology, an ongoing limitation with many studies on children with DD is the likelihood of sampling bias. Specifically, samples of children and parents are often drawn from families in contact with disability services or charities and support groups. An alternative approach is to use suitable population-based studies within which it is possible to identify a sub-sample of children with DD (Emerson, 2012). A limitation of population studies is that researchers must make use of variables available within the database as opposed to having the flexibility to proactively identify measures designed to address their research questions (Emerson, 2012). In the present research, we extracted data on children with ID from the UK Millennium Cohort Study (MCS; Centre for Longitudinal Studies, Institute of Education, University of London). We focused on data available during the period up to when the children were 5 years of age. The advantages of the MCS for the present research were that (a) standardized test data were available to enable identification of children with ID, (b) longitudinal data were available from early in the child's life, and (c) data were available on parenting and parent-child relationship as well as children's behavior problems.

Our specific objectives in the present study were (a) to explore levels of discipline, home chaos, and relationship quality in parents of toddlers with and without ID; and (b) to examine the association of parenting behaviors on concurrent and later behavior problems in children with an ID. Because the research is based on data representative of the entire UK population, we report base rates for these parenting variables for mothers with and without a child with ID. The cohort design controls for any chronological age developmental effects on children's behavior. In addition, the time span between 3 and 5 years of age is a period when behavior problems emerge and become established for children with ID (Green, O'Reilly, Itson, & Sigafoos, 2005; Kurtz, Chin, Huete, & Cataldo, 2012). Based on findings from typical development, we hypothesized that each parenting variable would be significantly associated with concurrent and later behavior problems. We also examined the combined effects of parenting variables to simulate a closer approximation of real life where discipline practices co-exist within a home atmosphere, and the context of a parent-child relationship. Parenting behaviors have been shown to vary in different socioeconomic strata (Hoff, Laursen, & Tardif, 2002; McLoyd, 1998), and according to the Family Stress Model (FSM; Conger & Donnellan, 2007), parenting behaviors (such as harsh parenting or inconsistent discipline) mediate any effects of deprivation on children's outcomes. Given this, we wanted to account for any effects of deprivation on children's behavior problems when examining their association with parenting practices. We had no specific hypotheses about which parenting variables would continue to be associated with child behavior problems once all parenting variables were modelled together.

Methods

The present study used data from the MCS, an ongoing British birth cohort designed to prospectively follow children born in the new millennium. MCS participants are identified through the Child Benefit Records. The child benefit is a non-means tested (i.e., independent of family income or other resources) welfare benefit available at the time of the study's inception to all children in the United Kingdom. Participants were randomly selected to be representative of the entire UK population, and disproportionately stratified to over-include children from ethnic minority and disadvantaged areas, to ensure sufficient numbers of these children are available in subsequent waves of data collection (Plewis, 2007). MCS waves are available when the children were 9 months (MCS1), 3 years (MCS2) and 5 years (MCS3) of age. Participants were drawn from 389 randomly selected electoral wards with 18,552 families participating in MCS1. There were 18,818 children in MCS1 (twin/triplet siblings of the target child were also included). MCS2 targeted MCS1 participants and a booster sample of 1,389 new families, who were identified for participation in MCS1 but for various reasons, had not participated. MCS2 included 15,590 families

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(78% participation rate) with a total of 15,808 children. MCS3 targeted all previous participants and included 15,246 families (79.2% participation rate) with 15,460 children. In households with more than one eligible child (i.e., twins, triplets), a random computer selection identified the target "first cohort" child. First cohort children represent the base population for the present study.

All data reported here were obtained by direct assessments and interview with a main respondent. With the exception of cognitive measures (see Measures below), all other scales were rated during the main respondent interview. At 9 months, this person was the mother in 99.7% of cases. At age 3 years, mothers represented 99% of main respondents and at age 5 years mothers were 97% of main respondents. There were generally no differences between mother main respondents and other main respondents, therefore all available data were used.

Participants

Among the 15,246 first cohort children in MCS3, 516 children were identified with an ID (see Measures section for further information). Among these, there were more boys (66%) than girls. On average, main respondents were 33-years old when children were 5-years old. At age 5, the majority of children with an ID were of White ethnicity (71%). About 30% lived in single-parent households, and 43% had more than two siblings. Approximately 7% were reported by their parent to have an additional diagnosis of autism spectrum disorder (ASD), and 4% a diagnosis of attention deficit hyperactivity disorder (ADHD). Forty-seven percent of children lived in a household where all parents (if more than one) were unemployed, 54% had an income below poverty line, 14% were struggling to manage financially, and 41% lived in deprived neighborhoods. Table 1 describes the socioeconomic profile of participants at each MCS wave, and also provides the equivalent figures for the MCS children without ID, as a way to contextualize the ID group. Children with an ID systematically experienced more deprivation.

Measures

Cognitive assessment. Using a computer-assisted personal interview, trained interviewers administered three scales of the British Ability Scales (BAS-II; Elliot, Smith & McCulloch, 1996) to MCS children. These scales were naming vocabulary, picture similarities, and pattern construction. BAS-II is a UK standardized measure of cognitive functioning, and the three scales administered assess pictorial reasoning, verbal, and spatial abilities which represent the three component dimensions of an overall general conceptual ability (Hill, 2005). A principal components analysis was run which confirmed the presence of an underlying *g* factor, as a measure of general cognitive functioning (Hill, 2005). The underlying factor accounted for 56% of the variance in the scale scores. The loadings of the scales on the *g* factor were .74 for picture similarities, .75 for naming vocabulary and .76 for pattern construction. *G* scores were standardized with a mean of 100 and standard deviation of 15. In the present study, we defined ID as a score equal to or less than 2 standard deviations below the mean standardized *g* score (i.e., < 70). The mean *g* score was 62 (SE: .38) for the ID group and 102 (SE: .27) for the group without ID.

Children's behavior problems. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) was used to assess children's behavior problems. The SDQ is a parent-report measure and includes 25 items that measure emotional symptoms, conduct problems, hyperactivity, peer relationship problems, and prosocial behavior. Each item is rated on a 0–2 scale, and a SDQ total behavior problems score (range 0–40) is available by summing the first four subscales (20 items in total), and this was the score used in the present study. Higher scores indicate higher levels of behavior problems. Data from a representative sample of British children suggested that the SDQ demonstrated satisfactory reliability (interrater, test-retest, and internal consistency), and acceptable sensitivity/specificity for use in community samples (Goodman, 2001). The SDQ also maintains good psychometric properties when used with children with an ID (Emerson, 2005). In the MCS, the SDQ data were available at age 3 (MCS2) and age 5 (MCS3). Internal consistency (Cronbach's alpha) of the SDQ total score was .77 at age 3 and .82 at age 5 for children with an ID. Cronbach's alpha for children without an ID was .78 at age 3 and .79 at age 5.

At 9 months (MCS1), a measure of infant temperament was obtained with 17 items from the Revised Infant Temperament Questionnaire (RITQ; 4–11 months; Carey & McDevitt, 1978). The 17 items are measured on a 1–5 scale, and

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Table 1
Socioeconomic Profile of Families of Children With and Without an Intellectual Disability (ID)

Profile of Participants	Children with an ID[a]	Children without ID[b]	Comparison[c] (*p*)
Parental unemployment			
9 months	23%	7%	< .001
3 years	23%	6%	< .001
5 years	47%	19%	< .001
Income poverty			
9 months	54%	28%	< .001
3 years	51%	27%	< .001
5 years	54%	30%	< .001
Subjective poverty			
9 months	17%	10%	< .001
3 years	13%	10%	.091
5 years	14%	11%	.031
High neighborhood deprivation			
9 months	45%	22%	< .001
3 years	43%	20%	< .001
5 years	41%	21%	< .001

[a]Unweighted (weighted) number of children with ID at ages 9 months, 3 years, 5 years: 481 (437), 443 (413), 516 (473), respectively. [b]Unweighted (weighted) number of children without ID at ages 9 months, 3 years, 5 years: 13,997 (14,306), 13,205 (13,789), 14,515 (14,944), respectively. [c]All data were weighted. Chi-square associations compared weighted data between groups. *P* values of chi-square tests are reported.

were summed to create a composite measure of infant temperament (achieved range 17–69) with higher scores indicating a more difficult temperament. In the present study, internal consistency was satisfactory: Cronbach's alpha was .72 for children without ID, and .77 for children with ID.

Parenting. At age 3 (MCS2), dimensions of parenting included a measure of discipline use, home environment, and the child/parent relationship. Seven variables measured on a 1 (*never*) to 5 (*daily*) scale described use of inappropriate discipline practices (ignoring child, smacking, shouting, sending to bedroom, taking away treats, telling child off, and bribing with sweets). They were combined in a composite variable that measured frequency of disciplining (range 1–35), with higher values indicating more frequent use of inappropriate discipline practices. The discipline composite had excellent internal consistency (Cronbach's alpha = .96 for children with ID and .92 for those without).

Chaotic home environment was assessed by three items (disorganized house; you can't hear yourself think; calm atmosphere at home) measured on a 1 (*strongly agree*) to 5 (*strongly disagree*). These items were drawn from the Confusion, Hubbub and Order Scale (CHAOS scale; Matheny et al., 1995), developed to measure the extent of environmental confusion in a family household. The original scale has acceptable psychometric characteristics (Matheny et al., 1995). In the present study, a composite measure achieved a range from 3–15, with higher scores indicating a more calm/organized household. Internal consistency (Cronbach's alpha) was acceptable at .70 for children with ID, and .68 for children without ID. However, this composite needs to be considered with caution due to the small number of available items and associated reduced internal consistency.

The quality of the parent-child relationship was measured with the Student-Teacher Relationship Scale Short form (STRS-SF; Pianta, 1992). The STRS-SF includes 15 items that describe the type of relationship with a child. Initially developed to describe teacher-pupil relationships, a slight modification ("this child" becomes "my child") makes it appropriate for measuring parent-child relationships (e.g., Puma et al., 2010). Items are measured on a 1 (*definitely does not apply*) to 5 (*definitely applies*) scale, and two scores are

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obtained: conflict and close relationship. Conflict includes eight items (e.g., "When my child is in a bad mood, I know we are in for a long and difficult day"; "My child is sneaky or manipulative towards me." Scores can range from 8–40 with higher scores indicating higher levels of conflict between parent and child. Close relationship includes seven items (e.g., "When I praise my child, s/he beams with pride"; "If upset, my child will seek comfort from me." Closeness scores can range from 7–35 with higher values indicating more positive affect. The scale has been used with at-risk children in the community (Puma et al., 2010). In the present study, internal consistency for closeness (Cronbach's alpha) for children with and without ID was .91 and .92, respectively, whereas that for conflict was .81 in each group.

Family deprivation. To account for effects of socioeconomic deprivation on parenting (Conger & Donnellan, 2007; Hoff et al., 2002; McLoyd, 1998), we created a composite measure that reflected adversity. We identified measures that were identical across MCS waves (see Table 1). To create a composite of cumulative adversity from 9 months to 3 years, we combined MCS1 and MCS2 information on subjective poverty (family finds it quite/very hard to manage financially vs. family manages well financially), income poverty (OECD-defined poverty when family income is less than 60% of UK median equivilized household income), parental unemployment (parent(s) not in paid employment vs. at least one parent is in paid employment), and neighborhood deprivation. The latter is defined as living in an area in the bottom quintile of the Index of Multiple Deprivation (IMD). The IMD is a UK statistic to describe deprivation at the level of small geographical areas and combines information on income, employment, health, education, housing and services, crime, and the living environment. Values in our composite of cumulative deprivation ranged from 0 to 8 with higher values indicating more persistent deprivation. Internal consistency in the present study was good at (Kuder-Richardson 20) .75 for the group with ID and .74 for the group without.

Procedure and analysis approach. This study was a secondary analysis of data available in the first three surveys of the MCS (9 months, 3 years and 5 years). The MCS is managed by the Centre for Longitudinal Studies in the Institute of Education in the United Kingdom and all data are available through the Economic and Social Data Service (www.esds.ac.uk) through its data archive portal (www.data-archive.ac.uk). Ethical approval for the MCS1 was granted by the South-West Multi-Centre Research Ethics Committee (England), and by the London Multi-Centre Research Ethics Committee for MCS2 and MCS3. The ethical responsibilities of the present authors included the protection of participants' anonymity and confidentiality, but no separate research ethics review was required because the data are made available for secondary analysis.

We identified children with a likely ID at age 5 because their cognitive scores at that age would be more stable and reliable compared to cognitive measures available at age 3. Working backwards, we then identified which of these children participated in MCS2 and MCS1 (i.e., ages 3 years and 9 months). Descriptive data and comparisons were obtained from STATA 11, and data were weighted to account for the MCS sampling design and attrition. Weighting accounts for the disproportionate sampling of certain groups, preserving the population representative nature of the data and also accounting for any sample loss from one wave to the next. Of the 516 children with a likely ID at age 5 ($N_{weighted} = 473$), there were 443 at age 3 ($N_w = 413$) and 481 at 9 months ($N_w = 437$).

To address our first research objective, we compared discipline levels, home environment, and relationship quality between parents of children identified with an ID and those without. Because of the large sample sizes, results of comparison tests are more likely to be significant, so they are not very informative. For this, standardized mean differences were calculated as an effect size using Cohen's *d* formula (mean difference divided by the pooled standard deviation).

To address our second objective on the association between parenting behaviors and the behavior problems of children with an ID, we fitted a series of path models in AMOS 18. Path models are a type of structural equation model (SEM) fitted to observed data. We first examined whether each parenting variable (inappropriate discipline, calm/organized home, conflict, closeness) was significantly associated with concurrent (age 3) and later (age 5) behavior problems (Figure 1). A final model was built that included all four parenting variables (Figure 2). In all models, the stability of child behavior over time was modeled starting from infant temperament at 9 months to child behavior problems at 3 years and then at 5 years.

The final model also controlled for child gender and cumulative deprivation to account for

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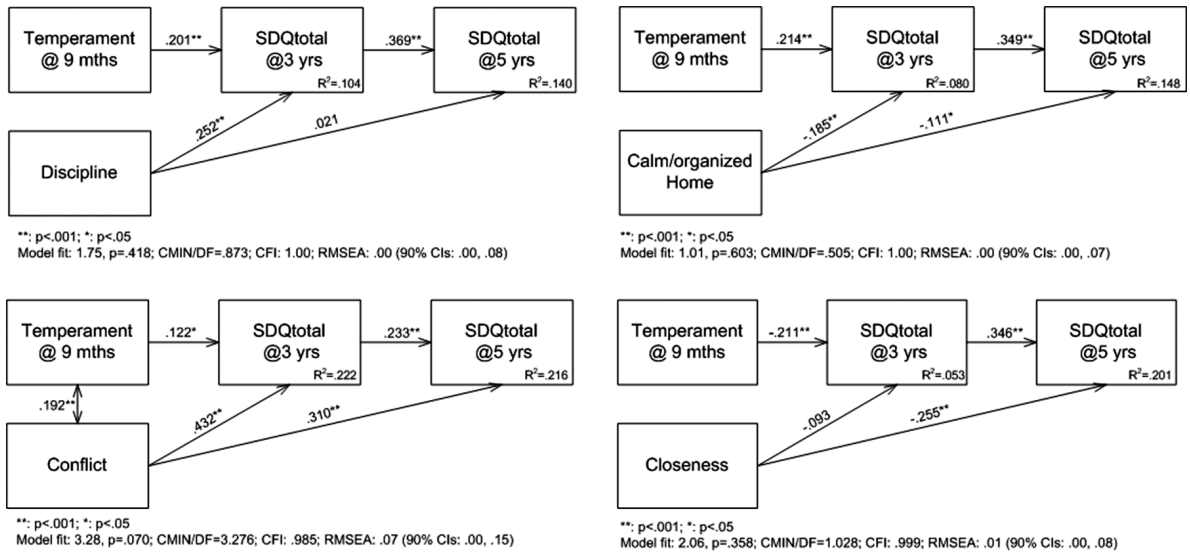

Figure 1. The association between each parenting behavior and children's behavior problems.

their effects on parenting, as there is evidence that adversity is associated with different parenting styles and practices (Hoff et al., 2002; McLoyd, 1998), and parenting differs for children of different gender (Kim, Arnold, Fisher, & Zeljo, 2005). Interrelationships between all exogenous factors (parenting variables, child gender, temperament, cumulative deprivation) were explored with bivariate correlations. When these were significant at $p < .05$, they were included in the final SEM model, and can be seen as double-headed arrows in the figures.

The data fulfilled the assumptions required for SEM. Model fit was examined using the chi-square statistic, the ratio of chi-square/degrees of freedom (CMIN/DF), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) with its 90% confidence intervals. Fit guidelines suggest that (a) CMIN/DF < 2 indicates good fit, while < 1.5 is a very good fit, (b) CFI $> .95$ indicates a good fit, and (c) RMSEA $< .05$ represents good fit, while RMSEA $< .07$ is an acceptable fit (Byrne, 2010). Where comparison of the fit between nested models was required, this was done using the Akaike Information Criterion (AIC) as well as the previous fit indices. The exact fit indices of the final models are reported below each Figure.

Results

Parenting Behaviors When Children Are 3-Years Old

Table 2 presents the mean scores for discipline, calm/organized home, conflict, and close relationship for parents of children with and without ID. The findings suggested that parents of children with ID use inappropriate discipline significantly less frequently, and this was associated with a small significant effect size (*d*) −.18 (95% CI: −29, −.07). The difference in chaos levels between the two groups was not significant (*d*: −.09, 95% CI: −19, .01).

Parents of children with ID perceived that their relationship with their child involved more conflict and less closeness than parents of children without ID. Conflict was associated with a medium effect size of half a standard deviation (*d*: .−50, 95% CI: −.61, −.38), and closeness differed between the two groups by about a third of a standard deviation (*d*: .30, 95% CI: .19, .41).

It is noteworthy that behavior problems at age 3 were significantly elevated in the ID group with a moderate effect size ($d = .44$, 95% CI: −.33, −.55; Table 2). The same was true at age 5: children with ID scored 12.37 (8.11) whereas children without ID scored 7.04 (8.44), leading to a sizeable difference ($d = .66$, 95% CI: .56, .76).

Concurrent and Longitudinal Associations Between Parenting Behaviors and Behavior Problems of Children With an Intellectual Disability

Table 3 presents the bivariate correlations among parenting behaviors within the ID group. To examine the putative effect of each parenting behavior, discipline, calm/organized household, conflict and closeness were in turn added to a

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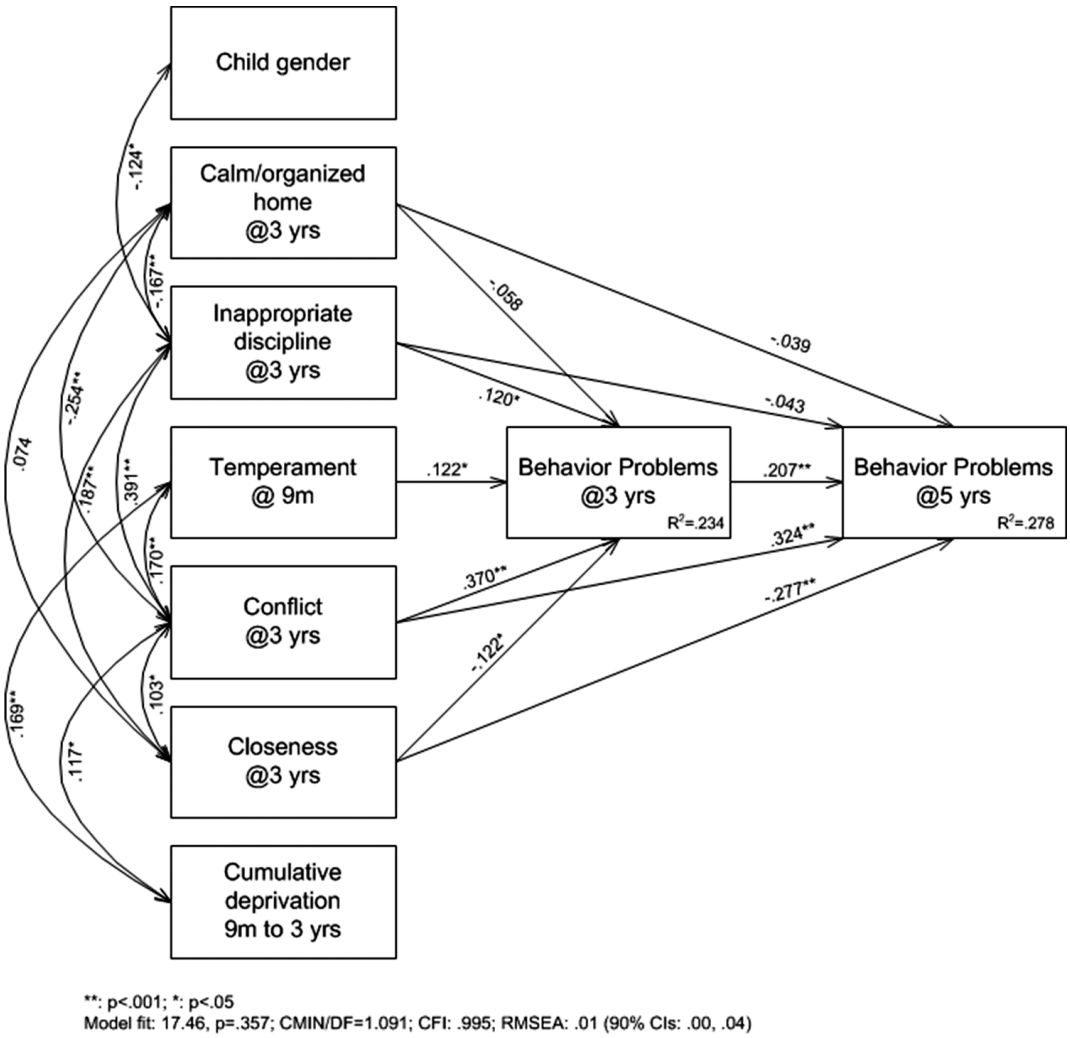

Figure 2. Final model: Parenting associations with concurrent and later child behavior problems.

model focused on their relationship with age 3 and age 5 behavior problems (see Figure 1). To account for potential effects of early infant temperament on parenting behaviors, the interrelationship of each parenting variable with infant temperament was examined with bivariate correlations (Table 3). Infant temperament was significantly associated only with conflict relationship (r: .22, $p < .001$), whereas it had near zero correlations with the remaining parenting variables. Therefore, the path from temperament to conflict was modeled (see Figure 1).

The fit indices indicated mostly good fit, with the exception of the model for conflict where evidence of good fit was less consistent. Findings suggested that discipline, calm/organized home, and conflict had a significant association with concurrent behavior problems (age 3); whereas calm/organized home, conflict, and closeness also had a significant association with age 5 behavior problems.

Having established that each parenting variable was individually associated with children's behavior problems, we fitted one model with all parenting variables together (Figure 2). This final model aimed to mirror better real-life circumstances where many parenting effects co-exist in the family home. The model also controlled for any effects cumulative deprivation may have had on parenting, and the effects of child gender on infant temperament and parenting practices. To identify the paths to include for control purposes, we explored the bivariate correlations between infant temperament, child gender, cumulative deprivation, and each parenting variable. Those with significant associations at $p < .05$ were retained in the final model. These additional

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Table 2
Parenting and Child Behavior

Variables Relating to:	Children with ID Mean (*SD*)	Children without ID Mean (*SD*)	Comparison[a] (*p*)	Effect size *d* (95% CIs)
Parenting at 3 years				
Inappropriate discipline	18.33 (5.98)	19.72 (7.83)	< .001	−.18 (−.29, −.07)
Calm/organized home	10.58 (3.24)	10.99 (4.68)	.007	−.09 (−.19, .01)
Conflict	18.54 (7.05)	17.16 (4.50)	.001	.30 (.19, .41)
Closeness	29.28 (7.60)	33.18 (7.88)	< .001	−.50 (−.61, −.38)
Child behavior				
Temperament at 9 months	37.67 (10.43)	35.70 (11.64)	< .001	.17 (.07, .27)
Behavior problems at 3 years	16.18 (6.32)	13.18 (6.86)	< .001	.44 (.33, .55)
Behavior problems at 5 years	12.37 (8.11)	7.04 (8.44)	< .001	.66 (.56, .76)

Note: ID = intellectual disability.
[a]Independent groups *t*-tests were conducted on weighted means. *P* values of *t*-tests are reported.

paths are depicted in Figure 2 as correlation coefficients on double-headed arrows.

The final model explained 23% and 28% of the variance in children's behavior problems at ages 3 and 5, respectively. Inappropriate discipline had a significant small association only with concurrent behavior problems (standardized path coefficient .120, $p = .022$), whereas calm/organized home had no significant associations with behavior problems at 3 or 5 years. Closeness had a significant association with behavior problems at age 3 (−.122, $p = .022$), and age 5 (−.277, $p < .001$). Conflict also had a significant association at both ages: the standardized path to behavior problems at age 3 was .370 ($p < .001$), and .324 at age 5 ($p < .001$). These results indicate that the type of relationship between mother and child appears to be more important in the long-term than more practical aspects of parenting such as disciplining and the organization of family life.

Discussion

Exploring parenting behaviors in ID, findings indicated that parents of 3-year-old children with an ID used inappropriate discipline practices less frequently, lived in similarly (dis)organized households, but their relationship with the child was characterized by less closeness and more conflict, compared to parents whose child did not have an ID. Although any differences in the use of inappropriate discipline practices was very

Table 3
Correlations (Pearson's r) Between Parenting Behaviors and Children's Behavior in Families of Children With an Intellectual Disability

Correlations	Calm/ organized home	Conflict	Closeness	Temperament at 9 months	Behavior problems at 3 years	Behavior problems at 5 years
Inappropriate discipline	−.188**	.397**	.182*	.049	.255**	.104
Calm/organized home		−.303**	.089	−.005	−.196*	−.175*
Conflict			−.093	.217**	.451**	.405**
Closeness				−.065	−.087	−.270**

*$p < .05$. **$p < .001$.

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small (effect size −.18), the differences between the two groups in the reported conflict and closeness to their child were more substantial (effect sizes indicated differences of a third and half of a standard deviation, respectively). This pattern of results is consistent with recent observational findings showing that mothers of children with DD engage in more negative and less positive parenting than mothers of children who are typically developing (Blacher, Baker, & Kaladjian, 2013).

Our findings suggest that mothers of children with an ID tend to view their relationship as more negative than mothers of children without ID. These findings mirror the pattern of relationships seen between children with an ID and their teachers (Blacher et al., 2009; Eisenhower et al., 2007), but also parent-child relationships in other childhood developmental conditions (e.g., ADHD; Keown, 2012). In ID, more negative relationships might be related to children's fewer functional skills that impede typical patterns of interaction between mothers and children.

Exploring the associations between parenting and concurrent and later behavior problems of children with an ID, findings indicated that whilst frequent discipline had a small association with higher levels of concurrent behavior problems, it was not associated with later child behavior. Living in a calm and organized home also had no association with children's behavior problems, after accounting for the effects of discipline and relationship quality. On the other hand, the parent-child relationship emerged as a significant correlate of behavior problems in young children with an ID. A closer relationship was associated with lower levels of concurrent behavior problems and acted as a protective factor for later behavior problems. A relationship higher in conflict was associated with higher levels of behavior problems at 3 years and was associated with increased risk for behavior problems at 5 years. Relationship quality emerged from the current study as the most important dimension of parenting in relation to children's behavior problems. The lack of an association between conflict and closeness (Table 3) suggests these may be independent constructs. Their effects concurrently and over time were also found independent of demographic variables and other parenting variables. Studies investigating the relationship between positive and negative parenting have found these constructs to be independent, and their effects on child psychopathology to not be interactive (Dallaire et al., 2010). It is likely, then, that parents do not oscillate between warmth and conflict as if they were opposite ends of the same relationship, but that they engage in both types of relationships, each with a separate effect on child behavior. The implication of this for research is that data on positive and negative relationships should not be combined in analyses, but treated separately. Around the age of 5, the relationship between parents and children is expected to change as children transition to full-time education (Trentacosta et al., 2011). Future studies would need to examine the trajectories of parent-child relationship in the population with ID and explore the long-term effects of early childhood relationships in adolescent behavior problems.

In the present study, family deprivation was not directly related to discipline or home chaos (bivariate correlations: −.011 and −.079, respectively), nor parent-child closeness (bivariate correlation: −.053), but it was related to parent-child conflict (stand. path: .117, see Figure 2). These relationships indicate that in families where a child has an ID, the FSM model could be extended to include parent-child conflict as another path through which cumulative deprivation adversely impacts on children's behavior problems. A further component of the FSM is parental psychological well-being. Conger and Donnellan (2007) summarize evidence available from typical populations to propose that parental psychological well-being impacts on children's well-being only via parenting practices. Thus far, the evidence on parenting mediating the effects of parental stress on the behavior problems of children with an ID is very limited (e.g., Osborne et al., 2008). Having demonstrated significant direct effects of parenting in this study, the next step would be to examine the potential mediation of parenting behaviors in the relationship between parental mental health and children's behavior problems using a longitudinal study.

We have mostly adopted a parent-effects approach to examine whether parenting behaviors are associated with the behavior problems of children with an ID. A transactional model of development (Sameroff, 2009) would indicate that children's developmental outcomes are shaped by the constant interplay between child characteristics and their environment. We only accounted for this in our control of the relationship between infant temperament at 9 months and parenting

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behaviors at age 3. There was only a significant small association between difficult infant temperament and higher levels of conflict (Figure 2), consistent with findings that early difficult temperament can shape later parenting (for a review, see Kiff, Lengua, & Zalewski, 2011). However, there was no further consideration of bidirectional effects at later ages, as the main aim of the study was to examine whether associations between parenting behaviors and child behavior problems among young children with an ID are present. Following findings on the importance of parent-child relationship quality, potential bidirectional relationships would need to be explored when investigating mechanisms that facilitate the maintenance of behavior problems.

A further limitation of this current study is the lack of clinical diagnosis of ID. The cognitive tests used to define ID in the current sample do not account for children's adaptive skills, an element required for diagnosis. In this respect, the present findings are applicable to a population with substantially decreased intellectual functioning, probably including, but not limited to, the population of children who might formally meet criteria for ID. In addition, as with all secondary analyses of population surveys, some measures selected were available only in abbreviated formats, and this was the case especially with CHAOS in the present study. The full scale may have afforded a more reliable measurement of the home environment, and displayed stronger effects in the final model. Finally, all measures were based on parental report, so it is likely that parents who report higher levels of behavior problems also perceive relationships as more strained. This possible bias may be addressed by using observations of parenting behaviors, though it should be noted that the pattern of our findings on parenting behaviors is similar to findings from observational data (Blacher et al., 2013).

In terms of implications for practice, this study suggests that the quality of parent-child relationship should be a target for parenting interventions when there is a young child with ID in the family. Directly increasing the closeness of the parent-child relationship and reducing conflict may be important dimensions to add to existing evidence-based parenting programs. To begin with, we need more information on how existing parenting programs affect perceived parent-child relationships. Thus far, the parent-child relationship is a relatively overlooked dimension in studies of parenting interventions with children with ID. Evaluations of parenting interventions in DD tend to show decreases in ineffective parenting practices including inappropriate discipline (e.g., McIntyre, 2008; Sofronoff, Jahnel, & Sanders, 2011; Whittingham, Sofronoff, Sheffield, & Sanders, 2009), but there is little or no information on changes in parent-child relationship. If existing evidence-based parenting programs are not effective at improving the quality of parent-child relationships, the present findings suggest that adapted versions targeting relationship improvements should be developed.

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